

# Evaluating The Effect of County Diversity on Educational and Health Outcomes

*Kenny Groszman, Jack Petersen, Bing Xu*

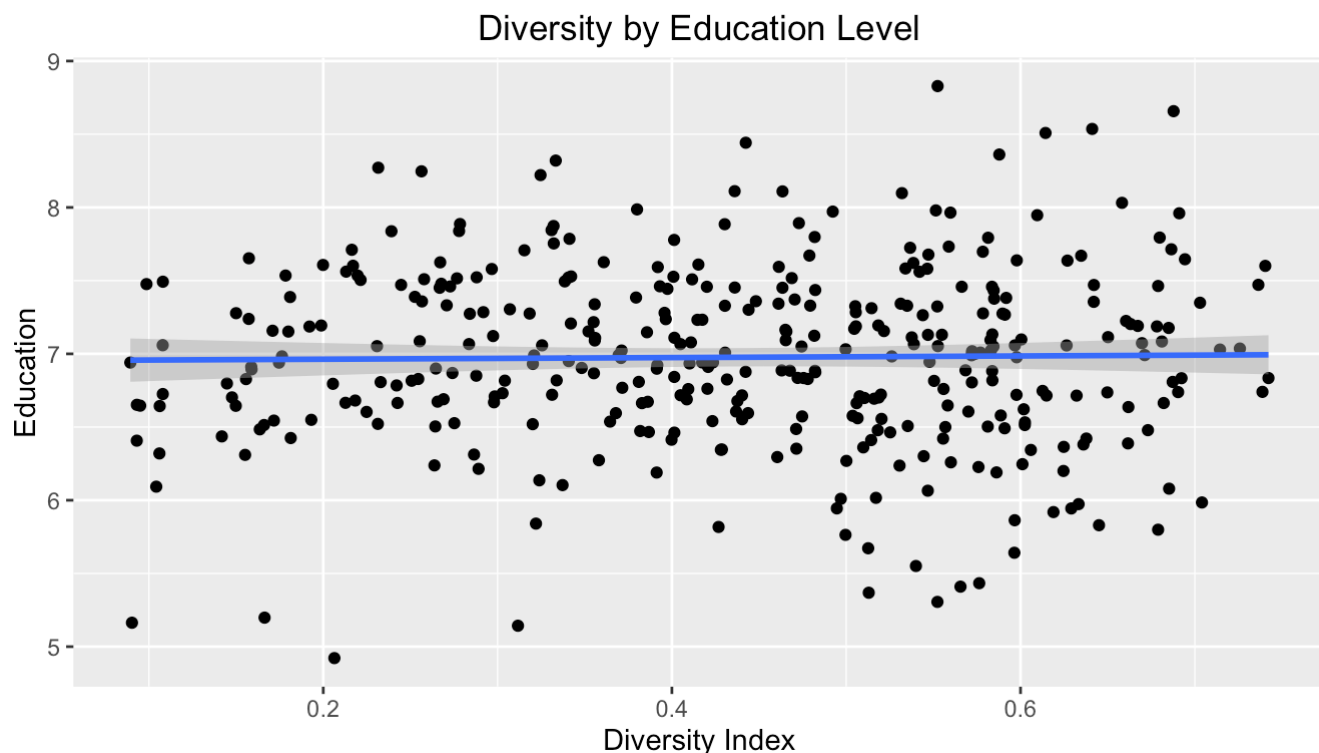
## Analyzing Diversity Effects on Educational Outcomes

Here, we pull educational data from various sources and compare it to county-level diversity data. The hope is that we would see a relationship between diversity levels and the educational trends in a county. We wish to look at the following measures for educational outcomes:

- IPUMS Educational Attainment measure, which is the highest level of school or degree completed, averaged per county
- Percentage of Adults with:
  - No High School diploma
  - High School diploma
  - Some college or Associate's Degree
  - A completed Bachelor's Degree

### 1. IPUMS Educational Attainment

IPUMS Educational Attainment measures the highest level of school or degree completed. We averaged this measure over each county and performed a regression to see whether there is any correlation between county diversity and educational attainment (as measured by IPUMS)



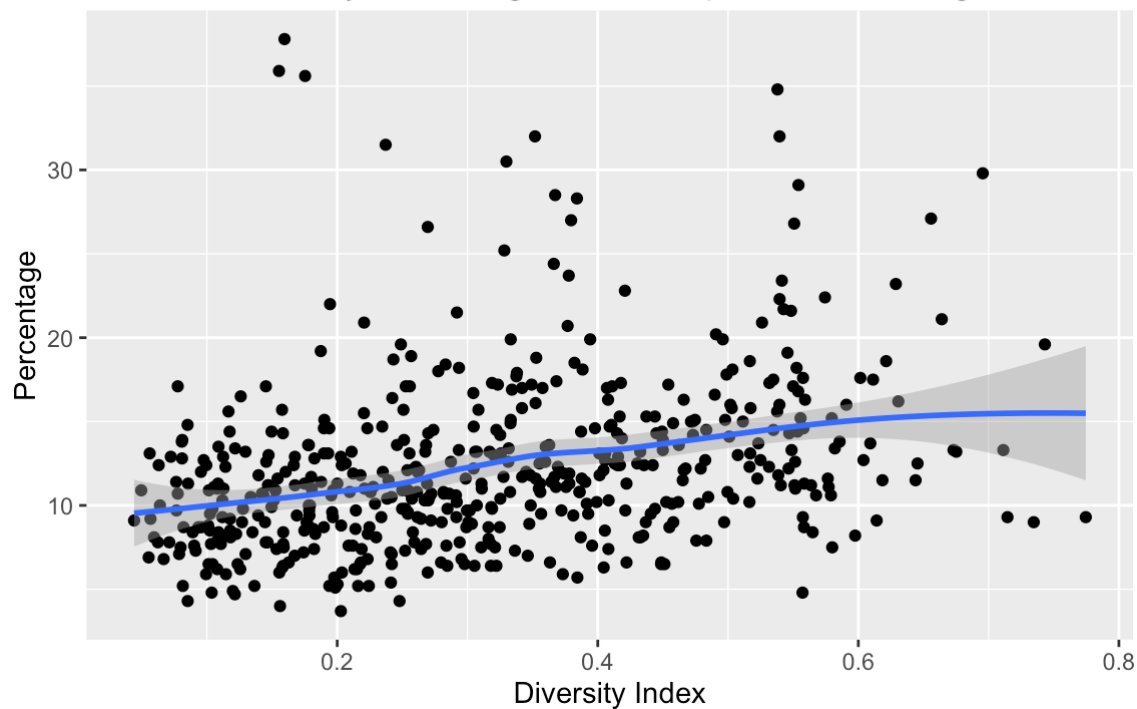
*Commentary and Interpretation:*

We see that diversity level in a county is *not correlated* with the education level of the county. In our graphic, the trend line we appended is nearly flat, suggesting that the metric we used to measure education is independent of diversity index. Moving forward, we will consider other measures of education, combining different factors given to us to move past the single variable that we used here.

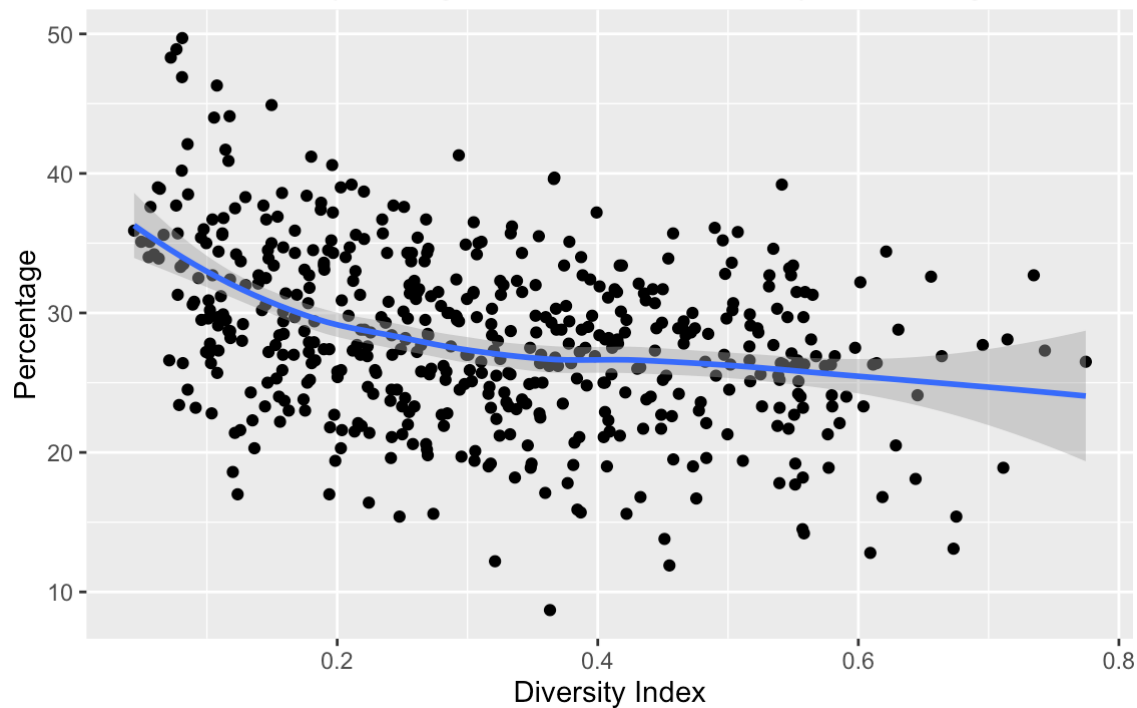
## ***2. Relationship between Diversity and Percentage of Adults with Particular Levels of Educational Attainment***

From the US Department of Agriculture Economic Research Service, we were able to find a data set that includes the percentage of adults attaining certain education levels for each county. So we are interested in finding whether there are relationships between the diversity we devised and percentages of completing degrees. There are four percentages, which are percent of adults with less than a high school diploma, percent of adults with a high school diploma only, percent of adults completing some college or associate's degree, percent of adults with a bachelor's degree or higher.

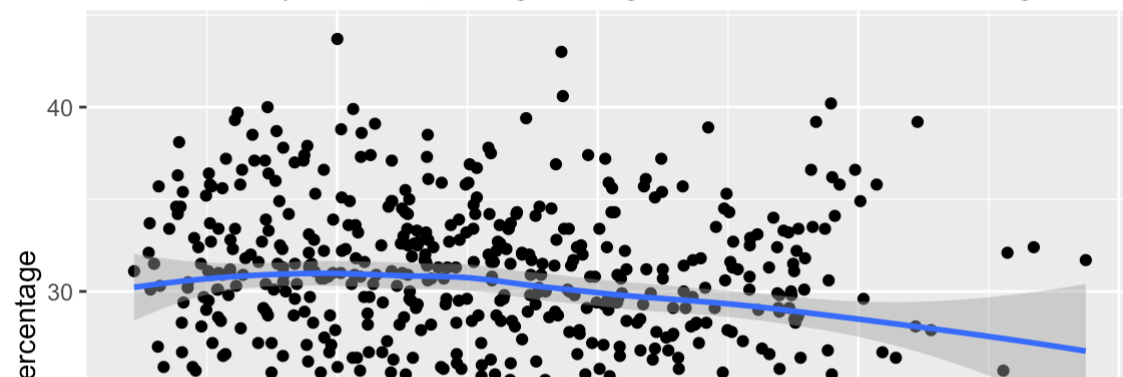
Diversity vs No High School Diploma Percentage

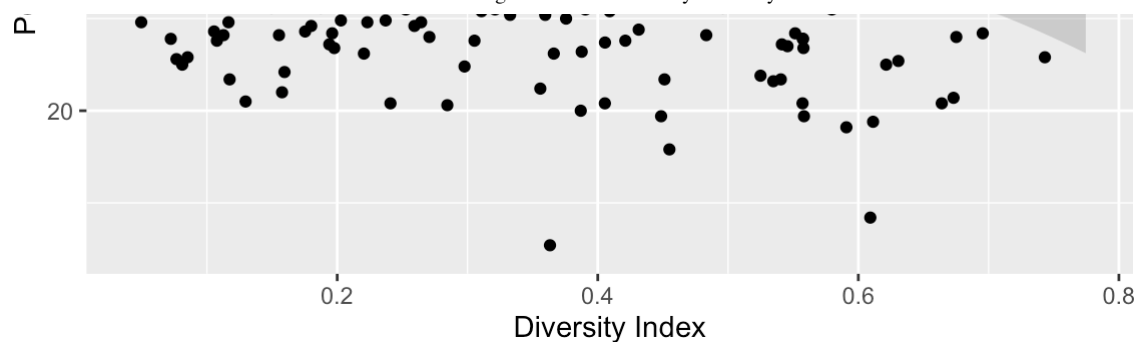


Diversity vs High School Diploma Only Percentage

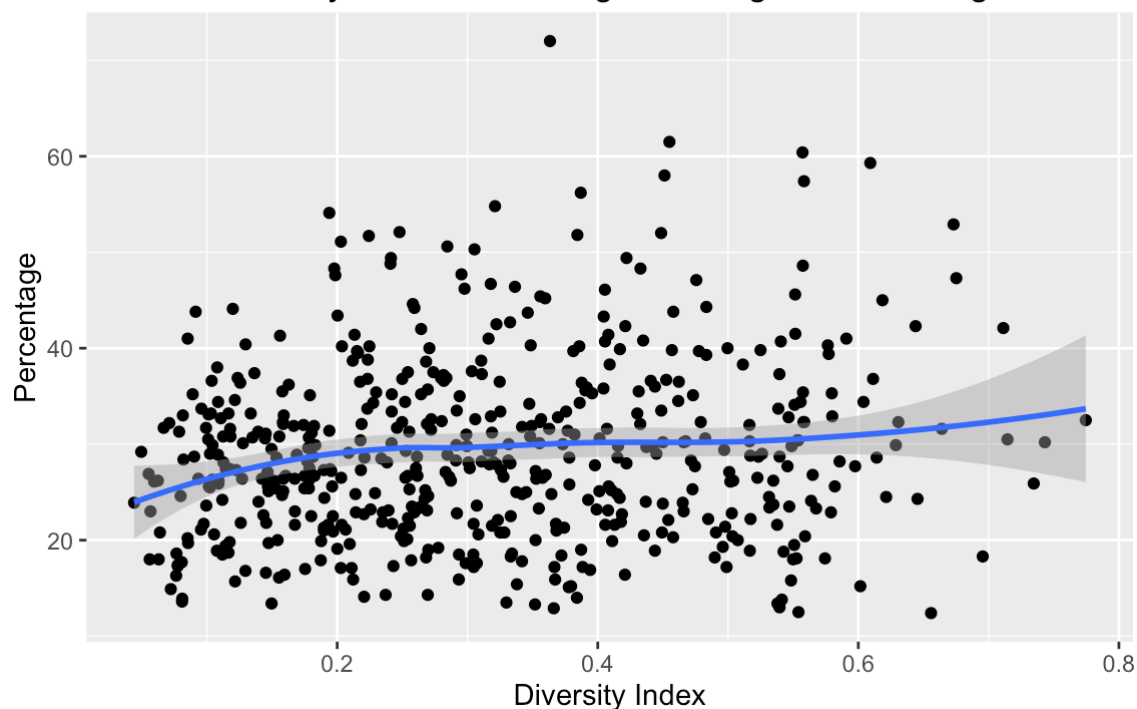


Diversity vs Completing College or Associate Percentage





Diversity vs Bachelor Degree or Higher Percentage



### *Commentary and Interpretation:*

From graphs above we can see that all rates seems not to have strong correlation with the diversity index. We also conducted the linear regression analysis and all regressions have a relatively poor  $R^2$ , with the maximum at 13.27% (the regression between diversity index and the percent of completing a high school diploma only).

We can find that there is a decreasing trend between the diversity index and the percentage of adults completing a high school degree only. We can find that counties whose high school diploma only percentage is high are having a relatively lower diversity index, which means that the race are more concentrated in these counties.

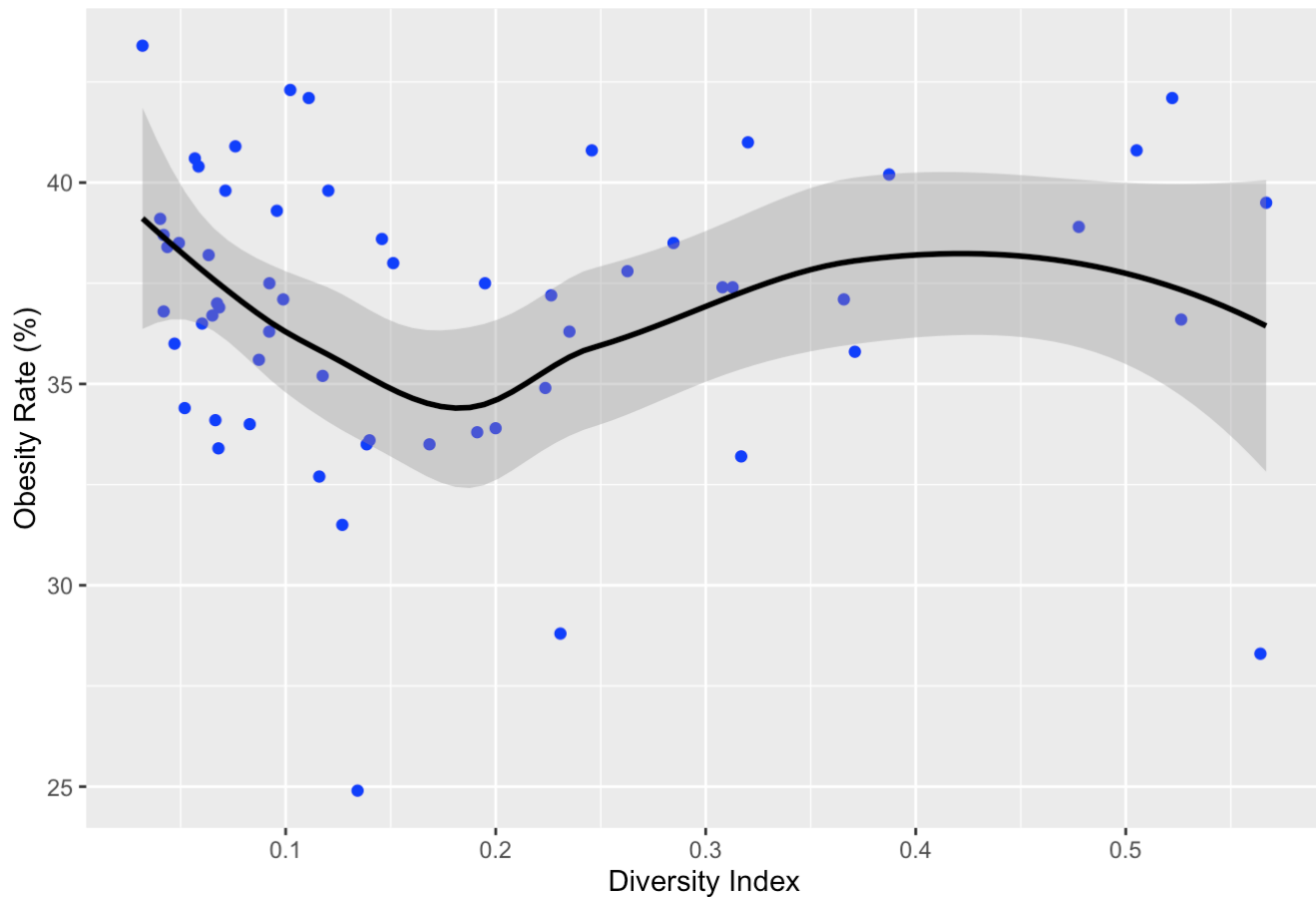
As for the relationship between the percentage of less than a high school diploma and the diversity index, the trend is a bit opposite. Highly diversified counties are a bit likely to have a higher percentage. There are some outliers and these outliers implies that counties with either low or high diversity indexes could have a high percentage.

While for the last two graphs, the relationships between variables are quite weak and there are many outliers in degree percentages.

## Analyzing Diversity Effects on Health Outcomes

Here, we examine how the diversity of a county plays into the relative health of those living in the county. We used diversity data from an index detailed above, and census data to examine health effects.

## Obesity Rate vs. Diversity

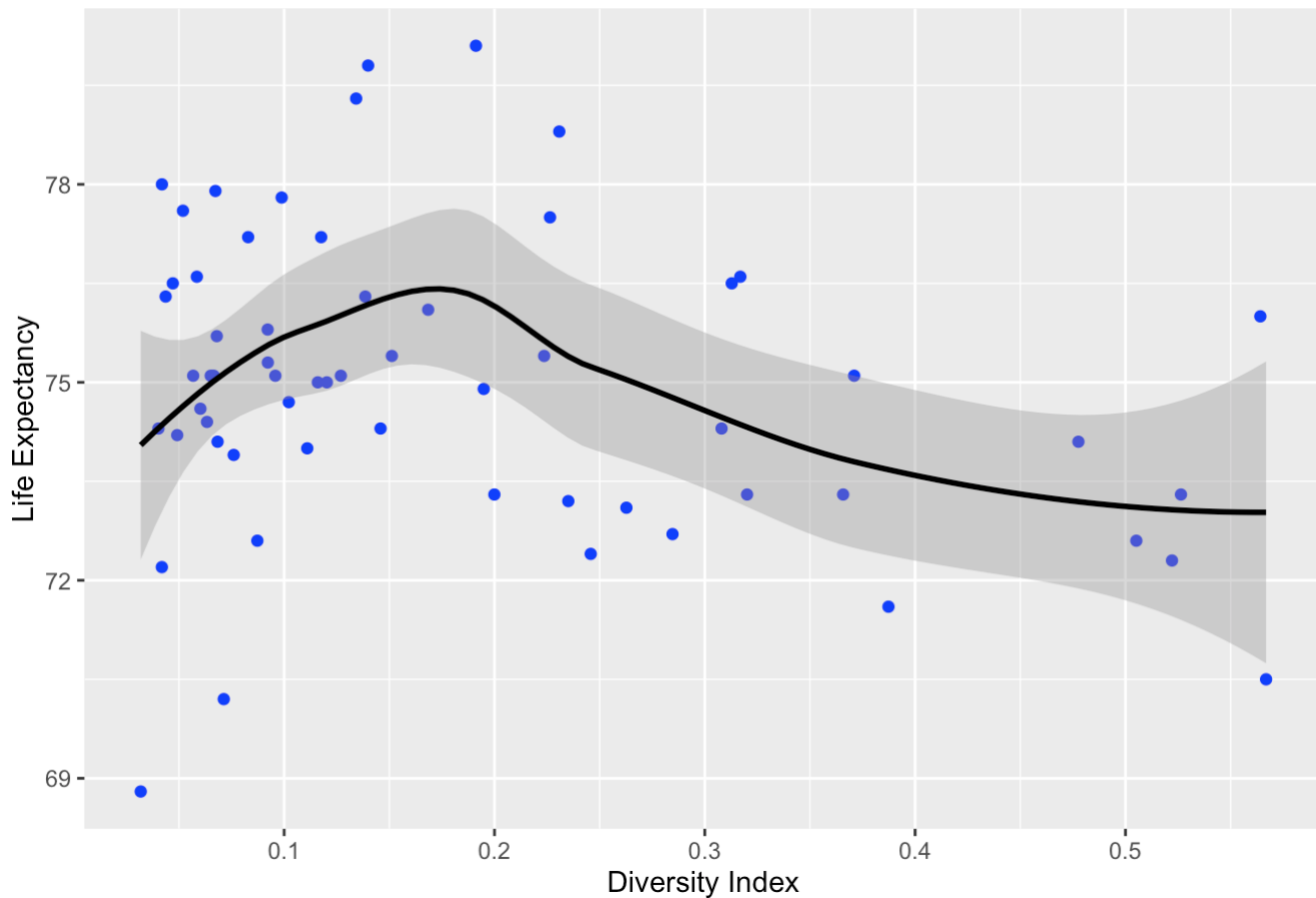


### *Commentary and Interpretation:*

From the graph, we see that obesity rates tend to be the highest in counties with medium high diversity. This could be correlated with higher poverty levels and that people in these counties eat more junk food. However, more data is necessary to make a confident conclusion on the matter.

Using the diversity index calculated before, we now look at health outcomes using a set of U.S. Census Data that measures obesity and life expectancy. This was compared against county diversity data.

## Life Expectancy vs. Diversity



### *Commentary and Interpretation:*

From the graph, we can see that life expectancy decreases with increased diversity. We came up with a few possible causes for this. First, a more diverse county is likely to be urban and have a higher risk of communicable disease. Additionally, certain racial groups have lower life expectancies which would drive down the life expectancy of more urban counties